USER MANUAL

高德红外
GUIDE INFRARED

Thank you for choosing this product. We recommend you to read through this user manual thoroughly before using this system. This will prove very helpful in using your product correctly and getting the most out of it.

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1. Safety instructions

1.1 Liability notice

- The use of this product is forbidden to persons who do not have a driver's license. Persons who have a driver's license can only use it on the type of vehicle for which their license is valid.
- The user is advised to read this user manual and this notice carefully and to understand it fully before using the product, and to strictly follow the installation guidelines in this manual. If the user has been unable to install the product strictly following the guidelines in the manual, this may result in severe inconvenience of use, or even material or physical damage. The company bears no legal responsibility whatsoever for any material or physical damage occurring as a result of the incorrect installation or usage of this product.
- The company bears no legal responsibility whatsoever for the mistakes or accidents cause by the user himself or by a third party, while this product is being used, nor for any material or physical damages caused by the wrong judgment of the displayed image.

1.2 Points of attention

- This system cannot be used as the main method of navigation by the driver, and it is

not a replacement for the vehicle's headlights or the human eye's vision existing with the help of the headlights. It can help you drive more safely, but you cannot change your regular driving habits.

- Do not allow the lens to look directly into the sun, a laser beam or high-energy welding machinery.
- The system is a combination of precision optics and static-sensitive circuit boards. Please do not drop or hit, and be careful for sources of static electricity, to avoid damage.
- Do not disassemble the system by yourself. If a failure occurs, please contact the factory, otherwise your product will be out of warranty.

1.3 Maintenance and protection

In order to ensure a good operating environment and to preserve the system in a good working condition, please respect each of the following requirements:

- Read this user manual carefully before using the system. If you have any questions or uncertainties, please contact us.
- Use this system only when the installation is reliable.
- Use this system within the prescribed range of voltage and temperature.
- It's forbidden to turn the system on an off quickly. After turning it off, you must wait for 30 minutes before turning it on again.
- Do not plug in any cables when the power has not been disconnected. It is recommended to turn off the power source before plugging in the power cable.

- The camera lens is coated with a layer of antireflective coating. Only clean it when the image quality is being affected, and avoid touching the lens surface. Acids left by the fingerprint can damage the coating and the lens, so please use the special lens cloth.

2. Product introduction

2.1 Foreword

In recent years, The driver assistance systems is gradually well known to everyone, The driver assistance systems could increase operator driving comfortable and driving safety without interfering driver normal driving conditions.

N-Driver, Vehicle Night Vision driver assistance system is convenient for the driver to identify the pedestrian ahead of the front area of the vehicle in the darkness (if there is no night vision assist system, this recognition will much later),The infrared night vision assist system can pick up the heating object that does not appear on the vehicle illumination visual field from the background, showing on the screen, which greatly improved the driving experience of the driver and enhance driving safety factor.

2.2 Product Function Brief Introduction

Thank you for choosing our infrared night vision system, with N-Driver. You would have a pair of insight eye into the night, assist you assured travel. Home safely.

N-Driver infrared night vision system based on infrared thermal imaging technology

convert the thermal image content inside the field of view into a two-dimensional image through the screen display, which can effectively eliminate glare when meeting on the opposite stimulation and the side glare interference to the sight, also will not have any impact on the field of view, allowing the driver in the dark, especially in rain, snow, fog, haze, dust and other harsh conditions, also could clearly observe vehicles and pedestrians on the road as well as obstacles, greatly improve the driver, passengers and third-party security. The system integrates the Guide infrared advanced optical imaging technology, image processing technology, intelligent alarming technology; friendly advice the driver in vehicle front may cause potentially dangerous persons, animals and vehicles

2.3 Product Appearance

N-Driver, Vehicle night vision driving assist system as Figure 1

Figure 1. N-driver vehicle night vision driver's aid system

2.4 Mainly Properties

- **Highlights the non-luminous heating object**

N-Driver Vehicle Night Vision driver assist systems can automatically identify and highlight pedestrians, cyclists, vehicles, animal non-luminous heating object in all weather conditions for the driver. Through the road situation showed beside the headlight beam display area help driver better understanding the whole traffic situation; effectively improve the visual effect of insufficient light, showing as Figure 2

Figure 2

- **Longer detection distance**

Under good visual field, far infrared night vision driver assist system effective distance could reach 300m, under bad weather (rain, fog, haze, dust, etc.) conditions, the night visual distance would reduce to a certain extent

Compared with this, asymmetric beam irradiation distance beside the opposing road is about 60m, alongside the road, the irradiation distance is about 120M, even if the high beam, the irradiation distance is only 200M, which is lower than night vision effective

distance.

Due to the N-Driver Vehicle Night Vision driver assist systems effective distance have obvious advantages than the effective distance of headlights and high beam, the pre-alarm function to the potential risk could win precious time for driver safety, which is very important to avoid accidents and to protect the passenger personal and property safety , showing as Figure 3.

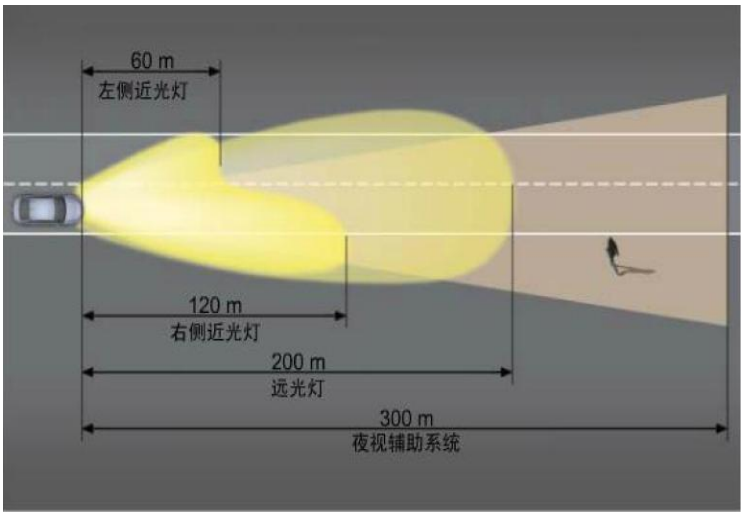

Figure 3

- **Anti-glare function**

N-Driver, Vehicle Night Vision driving assist system through the acquisition of external infrared radiant energy to form the corresponding image, so when meeting oncoming vehicle, the high beams on the coming vehicle don't have influence to the infrared imaging, efficiently reducing traffic safety problems caused by glare for the driver, enhance the

driver safety when meeting oncoming vehicle, showing as Figure 4

Figure 4

- **Using in all Weather**

Infrared night vision can adapt to a variety of bad weather (rain, fog, haze, dust, etc.), and not affected by the light, suitable for a variety of time period, which could be used under all kinds of weather conditions, showing as Figure 5.

Figure 5

- **Pedestrian Recognition function (IR312 models only)**

N-Driver, Vehicle Night Vision driving assist system could automatically identify and highlight the pedestrian inside the infrared image, also could make alarming to the possible

collision hazards .The detection model is not only includes the upright walking routine pedestrians in front of vehicle, but also including some cycling, electric cars and motorcycles specially pedestrian.

- **Identify pedestrians Marking / alarming**

  Identification is the rectangle marking

  Alarming is Yellow pre-alarm and Red serious warning, showing as Figure 6

Figure 6

- **Recognition & alarming distance**

Normal mode: If the distance between People and Vehicle is over 70m, then the imaging would be too small, the system couldn't accurately determine pedestrians. If the distance between pedestrians is less than 15M, then the imaging would be too large, the system also couldn't accurately determine pedestrian

High-speed mode: the system for pedestrian detection distance could reach 110M (now the night vision systems and vehicle could maintain communication and access speed information)

Alarming Strategy: Under normal circumstances, make alarming in front of the vehicle 15-70M detection area find the pedestrian. When the car traveling in the center of the road, the lanes on both sides does not alarm.

1 RED ALARMING

When the pedestrian is in front of the vehicle 15-30M ，using a red rectangle to display the pedestrian position, the red pedestrians marking image is alarming, while loud three times "bit" sound

2 YELLOW ALARMING

When the pedestrian is in front of the vehicle 30-70M, using a yellow rectangle to display the pedestrian position, the yellow pedestrians marking image is alarming, while loud one

time “bit” sound.

- **Automatic speed mode switching:**

1. High-speed mode

When the vehicle speed is higher than 80KM / H and the car is straight driving, the center area of the image would be displayed 1.5 times magnification, the detection distance is up to 90-120M

2. Middle speed mode.

When the vehicle speed is lower than 30km/H, when the car is steering left, the image left area would be displayed 1.5 times magnification, the car is steering right, the image right area would be displayed 1.5times magnification.

3. Low-Speed mode

When the vehicle speed is lower than 5KM/h, the pedestrian detection function is forced to shut down.

- **Alarming range**

1. Green rectangle area is the identify areas, the identification marking would be done if have the presence of pedestrians within the detection area

2. within arrow1 indicating yellow area, regardless of any distance, only rectangular frame marking no alarming

3. Within Arrow2 indicating red area, 15-30M is red alarming, 30-70M is yellow pre-alarming

- **Pedestrian identification condition**

1. There is a certain temperature difference required between the pedestrian and the environment .With the ambient temperature rises, the infrared image contrast begins to decrease, the system becomes more and more difficult to identify pedestrians. When the room temperature is higher than 28 degrees Celsius, the pedestrian detection function would be automatically shut down.

2 .The imaging ratio between pedestrians and cyclists would be unique, which should be

clearly distinguished, For example, when the pedestrians is between the front vehicle and the vehicle, it will affect the system's recognition effect to pedestrian

3. In general, both people are in an upright state, or walking, running and other states, the system all could identify it, but person is under the lying state, the system does not recognize it.

4 .Suppose case the pedestrian is shield (such as the pedestrian is after the parked vehicle, or after the roadside tree Etc), then the system is difficult to identify it. Particularly the pedestrian head and upper body is blocked, the system is difficult to recognize it.

3. Technical Specifications

	N-Driver
Camera specification	
Detector	
Detector Type	384X288 Asi Microbolometer
Spectral Range	8~14um
Optical	
Lens	14.8 mm /F#0.96
FOV	36° X27°
IFOV	1.7 mrad
NETD	100mk@25℃
MRTD	500mk@25℃
Image presentation	
Video Output	25HZ PAL or 30HZ NTSC
Adjust	Auto brightness and contrast adjustment
Image calibration	Auto calibration without shutter
Image recognition	auto pedestrian recognition
Alarm	auto
System performance	
start up time	8-s
Defroster	≤2℃ activate defroster automatically @-30℃ deice 1mm ice within 15m ≥7℃ close defroster automatically
Power	
External DC adapter	7V~36V DC
Power dissipation	≤3.5W ≤1.4W without alarm function
Interfaces	
Command and Control	RS232
Image display	Real time on PC or indicated monitor

Environmental	
Operating Temperature	-40 deg to 70deg
Storage temperature	-45 deg to 80deg
Dust protection	MIL-std810
Rating	IP67
Physical	
Weight (including lens)	≤1kg
Size	84mm X 63mm X 101mm

4. How to use the product

4.1 Using your N-driver

The N-driver is very easy to use, but we recommend that you read through this section carefully to fully understand the content displayed on the screen. The Image you see on the display looks very much like a black and white image shot during the day, but it's not. Understanding these short notices about the image will help you make the best use of your system.

The Thermal Imager will automatically adjust to changes is the scene, without any operations required. It will optimize the brightness and contrast to provide you the best possible image.

The thermal Imager does not detect visible light like a normal camera; it only detects differences in temperature. When you use it at night, you will notice that the image quality is different, this is very normal. The thermal Imager detects the difference in heat radiation of the object within sight, and uses black (or dark grey) to display cold objects, and white

(or light grey) to display hot objects.

The N-driver uses advanced artificial intelligence programming to detect pedestrians and vehicles and other hot objects in front of you, and it alerts you of them for your safety. When the distance between you and the object is smaller than a safe distance, it will sound two bleeps and show a yellow triangle. When the distance is so small that there is a serious danger of collision, it will sound four bleeps and display a red triangle.

When the N-driver alerts you of danger, please drive carefully and check whether any of the following dangerous situations may exist which may affect your driving safety:

- A pedestrian is crossing the road
- The distance between you and the vehicle in front of you is too small, and thus unsafe

（**Warning Sign** ）

4.2 Start N-Driver

After installing the N-driver in a fixed installation or on the roof, please test the instrument to ensure that the system functions properly. Tear off the protective film before installing and testing.

After powering on the device, you will hear a slight ‘clicking’ sound. This is the sounds of the internal image correction. It is cause by a mechanical shutter opening and closing. The

correction will cause the image to freeze briefly. This phenomenon occurs at a certain time interval.

5. Troubleshooting

5.1 No video image

- Check the power cable connecting.
- Check the video cable connecting.

5.2Lines in the image or “ghost” image happen

Check whether the image is frozen or you hear the ‘click’ sound from the shutter of the Thermal Imager. If the image never freezes and you never hear a ‘click’ sounds (it may take a few minutes for this to happen), then the shutter may be broken. Contact your authorized service point for repair.

5.3 Image Jitter

Check the mounting bracket. The bracket must be solid and reliable.

5.4 Dim image

Check the connection cables between the display and the Central Processing Unit.

5.5 Maintenance

Definition of return and repair

1、Return for replace：

1）New device：Device package open and in the warranty period which has not be sold but with problem；

2）Batch quality problem：Device which has batch quality problem

2、Repair：

1）Fault device：Device is faulty which needs to repair by manufacturer.

2）Fault device by user：In warranty period, device is disassembled and damaged by user.

3）Stop production, off-price device：Beyond warranty period, device is disassembled and damaged by user.

Replacement Principle

1、Replacement Conditions：In the conditions of no artificial damage, no overhaul, no damage to the body, complete warranty, anti-fake and logo stickers, users can replace a new one at any regional agent with purchase invoice and warranty card within 7 days from the date of purchase if the camera is failure with normal operation.

2、Exchange Procedure：The service personnel check strictly the failure camera accessories, warranty card and purchase invoice, then replace the new one for the users and fill the warranty card for replacement record.

3、Replacement Notes：

1）The replacement is restricted to the camera, excluding the package and accessories. The warranty card is renewed once the camera is replaced；

2）regarding to the camera with artificial damage, the free repair is provided rather than replacement on the basis of friendly negotiation；

3）The production which has been stopped production is only provided the service of free repairing rather than replacement;

4）The obsolete, special offer and discount products cannot be replaced with new ones；

5）The complimentary accessories and promotion product will not be provided the service of guarantee, maintenance and replacement.

Warranty Principles

1、Warranty Conditions：Within 1 year from the date of purchase, the camera is malfunctioned without overhauls and the anti-fake sticker is complete.

2、Guarantee Items：

1）No cost is charged in warranty period(the commitment is applied only for failure in the condition of normal, excluding the software problems)；

2）The machine that dismantled by the user within the warranty period, the service man will charge material cost；

3）The machine without formally purchasing invoice is repaired according to date of manufacture on the machine(charge material cost)；

4）The same fault occurs again within three month from repairing date can be repaired free of charge by warranty card；

5）The machine that out of warranty conditions can be only repaired rather than free repairing , the material cost and repairing cost will be charged.

Gentle Reminding

N-driver is an omniseal waterproof design. Please don't disassemble the "N-driver" by yourself. We won't provide guarantee service to the machine which is damaged or destroyed by disassembling by users.

Please contact with local supplier or Wuhan Guide infrared Co,. Ltd immediately when the machine is faulted.

6. Standard and optional accessories

Standard accessories

The standard accessories in the package are listed below:

Item	Qty	Remark
Thermal Imager	1	
Mounting bracket	1	
User Manual	1	
Certificate of conformity	1	
User manual	1	

Packing list	1	
Adapter	1	Optional
Monitor	1	Optional

Monitor is not included in standard accessories. It is recommended to purchase monitor with video/audio input function, or you can choose our optional one.

NOTE:

Please ensure the voltage range of your monitor is capable with the thermal imager, or you can choose independent power supply to monitor.

The optional accessories for the N-driver may change. To obtain mounting brackets, monitors, cables and other accessories or the latest information, please visit http://www.guide-infrared.com or contact your dealer.

7. Appendix 1 Infrared technology

7.1 Thermal Imager Functioning Principles

A thermal Imager measures an Infrared energy (heat) source in a non-contact manner, and converts this wave into an electric signal, which is processed into a thermal image on the display. It can also be used as temperature measurement equipment. A Thermal Image can detect the precise quantity and temperature of heat. This allows you not only to see the hear, but also to identify heat-related problems and perform a precise analysis.

7.2 What is a vehicle infrared night vision system

Vehicle infrared night vision systems evolved from tank technology in the 1950's. The equipment was installed in tanks to allow them to operate at night and improve their vision. Car infrared night vision systems can detect infrared radiation, which is not in the range of wavelengths observable by the human eye. The uses of car infrared night vision systems are very wide. Because the price was very high in the past, it was mainly used for military purposes, such as in tanks and armored vehicles, radar vehicles, etc. The prices lowered steadily with advances in technology and its popularity in the market, so that the use of car infrared night vision systems came within reach of the general population.

7.3 Why use a car infrared thermal imaging system

When driving at night, you can see clearly within the reach of your headlights, but in the darkness ahead of you there may be danger.

Despite the big progress in automotive lighting over the years, the risk of driving at night is still higher than that of driving during the day. By the time that you spot someone changing a tire on the road, or pedestrians or animals crossing the road, you are already close to them, and it may come as a surprise. General Motors has conducted a survey of drivers asking them about thirty or forty different kinds of electronic devices and having them score them according to their preference. The findings of this survey are that drivers prefer a night vision most of all, and that they wish their car could be fitted with such a system. The reason for this is that systems such as airbags and ABS only work in the case of an

emergency, while a car night vision driver's aid is a form of active security, greatly improving the driving safety in difficult weather conditions.

According to National Highway Traffic Safety Administration (NHTSA) statistics, although driving at night accounts for only a quarter of all accidents occurring in traffic, it accounted for half of the fatal accidents. And poor visibility at night accounted for 70% (2002 data)

However, when your car is fitted with an infrared night vision system, it is as if you had a pair of owl's eyes binoculars, allowing you to see beyond your headlights and giving you foresight and early detection of potential dangers in the darkness, thereby greatly improving traffic safety at night.

The edge of the road, the marking on the middle of the road, objects on the road and pedestrians preparing to cross the road can all be displayed on the screen. Therefore, the infrared night vision system can help you discover more things than the car headlights, and it can show you all the objects within a distance twice the reach of your headlights.

The greatest benefit of an infrared night vision system to drivers at night, is that because it greatly expands their safety distance, they have more time for braking and reacting. A car infrared night vision system is not a substitute for your eyes in obtaining visual information. It only helps you obtain more traffic information under adverse weather circumstances, and especially helps you when you cannot see clearly.

7.4 Vehicles that can use IR driving assistant system.

Passenger car、commercial truck, bus and all the other vehicles that used for

entertainment-- N-Driver can detect danger in advance thus to reduce the probability of the accident and secure the safety of drivers and pedestrians.

Ambulance ----The probability of accident of ambulance keeps high is due to its high speed and weak braking system. N-Driver can change this because even under high speed the N-Driver can still see clearly of the danger that is going to happen.

Passenger car and cargo train---- N-Driver can see clearly the obstacle which positioned far away from the total darkness.

Heavy engineering vehicles----when navigating with IR assistant system, N-Driver can still work when visual light fail to work.

8. Appendix 2 Infrared technology

Proportion of characteristic of Pedestrian should be obvious. If pedestrian is 120m distance away from the vehicle, the pixel of image could be tiny, it's difficult for the system to predict it as human, the same in the circumstances when the distance is less than 15m.

If pedestrian is leaving away from the vehicle, there is no danger for the hitting, the system will not alarm.

Alarming is influenced by unobvious physical characteristic such as taking umbrella, riding bike, bending down, squatting down or wearing thermal installation material clothes.

Alarming can be influenced when the ambient temperature is higher than 28℃. Because in such circumstances, people and ambient background temperature difference will be hard to detect.

Big snow, heavy rain and other extreme weather will cause reduce of IR transmissivity thus influence the accurate detect and alarm.

The alarming of IR assistance System is influenced by complicated scene in front because it's difficult to extract the thermal characteristic of single human.

Thank you again for choosing Guide Infrared IR driving assistant system! Having a nice journey.

We are here for help!

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